CLAIMS:

What is claimed is:

1. A portable defibrillator comprising:

a capacitor adapted to receive electrical charge to deliver a defibrillation charge from a main battery via a regular current path;

power terminals to receive line power; and

an emergency charging circuit to charge the capacitor from the power terminals via an emergency current path distinct from the regular current path.

2. The defibrillator of claim 1, in which the line power is provided as alternating current, and the emergency charging circuit further includes a transformer.

3. The defibrillator of claim 1, in which the line power is provided as alternating current, and the emergency charging circuit includes a line power rectifier.

4. The defibrillator of claim 3, in which the emergency charging circuit further includes an input impedance to attenuate in-rush current to the capacitor.

5. The defibrillator of claim 1, further comprising a sensing circuit to sense when the capacitor has been charged up to a preset voltage.

6. The defibrillator of claim 5, further comprising a regulation switch to interrupt charging the capacitor responsive to an input from the sensing circuit.

7. The defibrillator of claim 5, in which the sensing circuit includes a resistive voltage divider.

8. The defibrillator of claim 5, further comprising an alarm device to issue an alarm responsive to an input from the sensing circuit.

9. The defibrillator of claim 8, in which the issued alarm is visual.

10. The defibrillator of claim 8, in which the issued alarm is auditory.

11. The defibrillator of claim 8, in which the issued alarm is a status indicator.

12. The defibrillator of claim 1, further comprising an emergency switch to activate the emergency charging circuit.

13. The defibrillator of claim 1, further comprising an emergency battery connected to be charged from the power terminals.

14. The defibrillator of claim 13, further comprising patient diagnostic circuitry operable from the emergency battery.

15. The defibrillator of claim 13, wherein the line power charges the emergency battery to a level sufficient to operate the patient diagnostic circuitry at least until one defibrillation shock is delivered.

16. The defibrillator of claim 1, further comprising patient diagnostic circuitry operable from the capacitor.

17. The defibrillator of claim 1, further comprising a short term, low voltage energy storage module.

18. The defibrillator of claim 17, in which the storage module gets charged along with the capacitor and which can support running diagnostics circuits on a single charge for a single shock.

19. The defibrillator of claim 1, wherein the emergency current path includes at least a portion of the regular current path.

20. The defibrillator of claim 1, further comprising: a microcontroller, and in which the received line power powers the microcontroller.

21. The defibrillator of claim 1, further comprising: a microcontroller, and in which the received line power does not power the microcontroller.

22. The defibrillator of claim 1, wherein the portable defibrillator is a fully automated defibrillator.

23. The defibrillator of claim 1, wherein the portable defibrillator is a semi automatic defibrillator.

24. A portable defibrillator comprising:

a capacitor adapted to receive electrical charge to deliver a defibrillation charge;

power terminals to receive line power; and

a charging circuit to charge the capacitor from line power after the power terminals receive line power.

25. The defibrillator of claim 24, in which the line power is provided to the power input terminals as rectified by a direct current adapter.

26. The defibrillator of claim 24, wherein the charging circuit automatically charges the capacitor after the power terminals receive line power.

27. The defibrillator of claim 24, wherein the charging circuit selectively charges the capacitor after the power terminals receive line power.

28. The defibrillator of claim 27, further comprising an emergency switch that selects whether the charging circuit charges the capacitor.

29. The defibrillator of claim 24, wherein the charging circuit begins charging the capacitor from the power terminals when the power terminals receive line power.

30. The defibrillator of claim 24, wherein the charging circuit charges the capacitor to a level sufficient for one shock.

31. The defibrillator of claim 30, wherein the charging circuit charges the capacitor to a level sufficient for one defibrillation shock within about 10 to 15 seconds after the power terminals receive line power.

32. The defibrillator of claim 24, further comprising a main battery adapted to charge the capacitor.

33. The defibrillator of claim 32, wherein a main charging circuit charges the capacitor from battery power.

34. The defibrillator of claim 33, wherein the charging circuit is an emergency charging circuit, the main charging circuit being distinct from the emergency charging circuit.

35. The defibrillator of claim 33, wherein the main charging circuit is the charging circuit.

36. The defibrillator of claim 32, wherein the line power charges the battery after charging the capacitor.

37. The defibrillator of claim 24, further comprising a line power detection sensor that signals the charging circuit to begin charging the capacitor when the sensor detects line power.

38. The defibrillator of claim 37, further comprising control circuitry, the control circuitry providing a charge enable signal to initiate the charging of the capacitor via the charging circuit.

39. The defibrillator of claim 38, wherein the charging circuit initiates charging of the capacitor after receiving signaling from the sensor or after the control circuitry provides the charge enable signal.

40. The defibrillator of claim 38, wherein the control circuitry provides the charge enable signal once the sensor detects line power.

41. The defibrillator of claim 24, further comprising a user on/off switch to activate defibrillator operation, the charging circuit charging the capacitor independent of the user on/off switch.

42. The defibrillator of claim 24, further comprising a sensing circuit to sense when the capacitor has been charged up to a preset voltage.

43. The defibrillator of claim 42, further comprising a regulation switch to interrupt charging the capacitor responsive to an input from the sensing circuit.

44. The defibrillator of claim 24, further comprising a step down transformer that reduces the voltage level of the line power before supplying it to the charging circuit.

45. The defibrillator of claim 44, further comprising a frequency multiplier circuit that increases the frequency of the line power before it is supplied to the step down transformer.

46. The defibrillator of claim 24, wherein the portable defibrillator is a fully automated defibrillator.

47. The defibrillator of claim 24, wherein the portable defibrillator is a semi automatic defibrillator.

48. The defibrillator of claim 24, wherein the capacitor can store enough charge for at least two successive defibrillation shocks.

49. A defibrillator comprising:

a first capacitor suited to deliver a first defibrillation shock to a patient; and

a second capacitor adapted to deliver a second defibrillation shock.

50. The defibrillator of claim 49, further comprising:

a main battery for charging the first capacitor; and

power terminals to receive line power and to charge the second capacitor with the received line power.

51. The defibrillator of claim 50, in which the first capacitor may also be charged through the received line power.

52. The defibrillator of claim 49, further comprising: a microcontroller, and in which the received line power powers the microcontroller.

53. The defibrillator of claim 49, further comprising: a microcontroller, and in which the received line power does not power the microcontroller.

54. A portable defibrillator comprising:

a capacitor adapted to receive electrical charge to deliver a defibrillation charge;

power terminals to receive line power;

operations circuitry adapted to monitor and control defibrillator operation and to be powered by a main battery;

a short term, low voltage energy storage module capable of providing emergency power to the operations circuitry when charged; and

a low voltage charging circuit to charge the storage module from the line power after the power terminals receive line power.

55. The defibrillator of claim 54, further comprising a capacitor adapted to receive electrical charge to deliver a defibrillation charge, and a capacitor charging circuit to charge the capacitor after the power terminals receive line power.

56. The defibrillator of claim 55, wherein the storage module can power the operations circuitry on a single charge for a single shock.

57. The defibrillator of claim 54, wherein the storage module is a super capacitor.

58. The defibrillator of claim 57, wherein the super capacitor has a capacitance in the hundreds of Farads.

59. The defibrillator of claim 54, wherein the storage module is an emergency battery.

60. The defibrillator of claim 54, wherein the portable defibrillator is a fully automated defibrillator.

61. The defibrillator of claim 54, wherein the portable defibrillator is a semi automatic defibrillator.

62. The defibrillator of claim 54, wherein the capacitor can store enough charge for at least two successive defibrillation shocks.

63. A method comprising:

procuring for immediate use a defibrillator having a capacitor;

determining that a battery of the defibrillator is too depleted for charging through a regular current path the capacitor adequately for a defibrillation shock; and

connecting the defibrillator to a source of line power for emergency charging the capacitor through an emergency current path.

64. The method of claim 63, further comprising activating an emergency switch to enable the emergency charging.

65. The method of claim 63, in which activating the emergency switch is by opening a cover of the defibrillator.

66. The method of claim 63, further comprising waiting for an issued alarm to indicate the capacitor has been charged, and then using the defibrillator.

67. The method of claim 63, wherein the defibrillator has a second capacitor, and the emergency charging charges both capacitors.

68. The method of claim 67, further comprising delivering a first defibrillation shock from the charge on the capacitor, and delivering a second defibrillation shock from the charge on the second capacitor.

69. A method of charging a defibrillation capacitor in a portable defibrillator when the defibrillator contains insufficient power to charge the capacitor, comprising:

connecting the defibrillator to line power;

stepping up the voltage level of the line power;

rectifying the stepped up line power voltage;

supplying the rectified line power to the capacitor.

70. The method of claim 69, further comprising sensing when the capacitor has been charged up to a preset voltage.

71. The method of claim 70, further comprising interrupting the supply of rectified line power to the capacitor after the capacitor has been charged up to the preset voltage.

72. The method of claim 70, further comprising issuing an alarm after the capacitor has been charged up to the preset voltage.

73. The method of claim 69, further comprising manually activating a switch before supplying rectified line power to the capacitor.

74. The method of claim 69, wherein the defibrillator has a second capacitor, and the supply of rectified line power is supplied to charge both capacitors.

75. The method of claim 74, further comprising delivering a first defibrillation shock from the charge on the capacitor, and delivering a second defibrillation shock from the charge on the second capacitor.

76. The method of claim 69, further comprising attenuating the current level of the rectified line power before supplying the rectified line power to the capacitor.

77. A method of charging a defibrillation capacitor in a portable defibrillator when the defibrillator contains insufficient power to charge the capacitor, comprising:

connecting the defibrillator to line power;

stepping down the voltage level of the line power;

rectifying the stepped up line power voltage;

stepping up the voltage level of the rectified line power; and

supplying the rectified line power to the capacitor.